Table tipping and a near-miss fall after unlocking a surgical table holding a morbidly obese patient

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Presented is a case report of a morbidly obese patient who experienced a near-miss fall in the operating room due to several factors. We present the importance of recognizing the change in fulcrum location on a Steris 4085 operating table when the bed is in the unlocked versus the locked position. This small change, in the presence of morbid obesity and reverse orientation of the table, can lead to an unsafe situation in which the patient's weight can cause the table to tip. We present potential ways to avoid this complication.

The prevalence of obesity for adults in the United States more than doubled from 1960 to 2010. In addition, the prevalence of those qualifying as extremely obese increased sixfold in that same time period (1). Not only have we experienced a significant increase in patient weight, but caring for an increasingly obese population has led to a worsening of the economic burden. The medical cost of obesity nearly doubled over the 10-year period from 1998 to 2008, rising from $78.5 billion to $147 billion (2). Obese patients are not only susceptible to the physiologic and pathological risks associated with their body habitus, but approach the limits of the safe use of operating room (OR) equipment, further increasing their risk of morbidity and mortality in the operative suite. We present a case of a near-miss fall of a morbidly obese patient occurring when the OR table tipped after unlocking stabilizing pistons in order to move the table position.

CASE DESCRIPTION

A 41-year-old man with chronic sinusitis presented to the operative suite for endoscopic nasal surgery. He was 6′3″ (1.9 m) and 417 lbs (189 kg), with a body mass index (BMI) of 52.4, placing him in the superobese category of obesity (BMI >49.9). The patient was transferred to the Steris 4085 (Steris Corporation, Mentor, OH) OR table, with the OR table in reverse orientation and the full articulation slide of the tabletop away from the base toward the direction of the patient's head *(Figure 1)*. General anesthesia was induced, and the patient was endotracheally intubated uneventfully. The surgeon then requested that the OR table be turned 90 degrees to the patient's left to improve access to the operative site and enable use of image guidance equipment. The circuit was disconnected from the endotracheal tube, and the operating table was unlocked. The table began to abruptly tip downward with the patient's head rapidly approaching the floor in a Trendelenburg-like trajectory. Fortunately, the resident was at the head of the table and was able to slow the table from tilting further, while another person provided counterweight at the foot of the table to level and stabilize it. The table was then turned with an adjustable height stool under the head of the table and additional staff placing counterweight at the foot of the table to maintain a level position. Once the OR table was relocked, the stool was kept in place to safeguard against a subsequent tipping. The patient did not experience any adverse effects from the event and the decision was made to proceed with the surgery as planned. The rest of the case was completed without incident or complication.

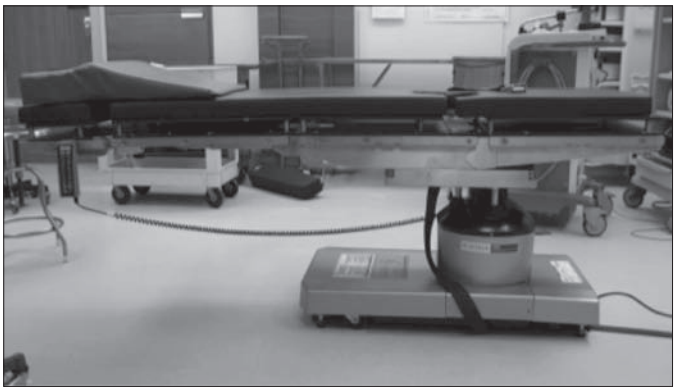

Figure 1. Steris 4085 operating room table in the reverse position.

DISCUSSION

Unfortunately, it isn't difficult to find examples in the news of patient falls in the OR leading to tragic, and sometimes lethal, results (3, 4). Often, these falls are a result of lack of attentiveness by OR staff during at-risk times, such as after the security belt has been removed during emergence from anesthesia

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(4). Additionally, a case similar to ours described a morbidly obese patient presenting for nasal surgery, who nearly fell from a tipping OR table after it was unlocked (5). An inquiry of the Anesthesia Closed Claims Project Database since the year 2000 revealed 21 claims in which a patient fell from the OR or procedure table. Fifteen of the scenarios were related to general anesthesia; four involved scenarios of regional anesthesia, and two, monitored anesthesia care (2). Most of the falls resulted in temporary and nondisabling injuries, but two resulted in permanent and severe injury. Among the 21 patient falls, half resulted in payment to the plaintiff ranging from $18,000 to $925,000, with a median payment of $49,000 (personal correspondence, Karen Posner, PhD, December 10, 2015).

The Steris 4085 OR table allows the tabletop to slide away from the base, thereby freeing space underneath the patient for radiologic imaging equipment. Examination of the product specification sticker on the OR table regarding weight limits by table position could easily lull a provider into a false sense of security. The stickers reveal a diagram of the OR table in normal orientation with the slide mechanism fully articulated toward the head with a stated weight limit of 600 lbs. Further investigation of the manufacturer's sales literature reveals that the weight parameters are accurate in the normal orientation, without specifying limits in the reverse orientation position (6). It is important to note the manufacturer's warning to not release the floor locks while the patient is on the table. One factor behind this warning is the shifting of the fulcrum once the leveling floor lock pistons are raised to lower the OR table onto the wheels in order to mobilize the table. In the case of the Steris 4085, unlocking the OR table shifts the fulcrum 4.75 inches toward the feet, effectively shortening the base when the floor lock pistons are withdrawn *(Figure 2).* Education of OR personnel and vigilance by all OR staff can decrease the risk of an OR table-tipping injury. OR personnel should be aware of the potential dangers, and care should be taken to have needed personnel readily available if the table needs to be unlocked when a high-risk situation exists.

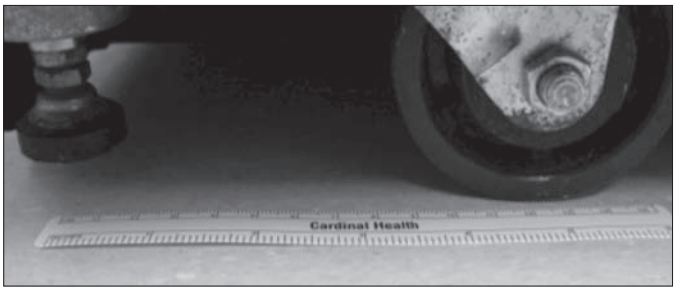

Figure 2. Close-up view of the base of the Steris 4085. Note the distance between the wheels and the floor locking pistons and how it will affect the fulcrum when the bed is unlocked and the wheels are engaged with the floor.

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